REMARKS

Claims 1-18 and 23-29 are pending. In the Final Office Action, the Examiner rejected claims 1-18 and 23-29 as being unpatentable under 35 U.S.C. §103(a). In response, Applicants are amending claims 1, 8, 9, 13-15, 23, and 27. In view of the foregoing amendments and following remarks, Applicants respectfully request reconsideration of the application.

Rejection Under 35 U.S.C. §103

In paragraph 5, the Examiner rejected claims 1-6, 8-13, 15-18, 28, and 29 under 35 U.S.C. §103(a) as being unpatentable over "Computer Graphics Principles and Practice" by Foley et al.(hereinafter *Foley*), in view of U.S. Patent Number 6,275,234 to Iwaki (hereinafter *Iwaki*). Specifically, the Examiner stated that "Foley describes determining both luminance and color values by the use of Gouraud shading…Foley's method is performed on a computer, which corresponds to the apparatus of claim 15 for performing the functions of claim 15." The Examiner further noted that *Foley* failed to disclose receiving a signal from an interface with parameter data, but contended that *Iwaki* disclosed "performing a rendering proves and subsequently performing interpolation on three-dimensional graphics data, received from a main memory through an interface, col. 7." The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time of the invention of *Foley* to include means for receiving the three-dimensional graphics data through the interface of *Iwaki* because it is necessary to include input data for graphics processing. Applicants respectfully traverse.

As amended, claim 1 discloses "*randomly* selecting an interior point within the graphic primitive" which is supported by the specification as filed (emphasis added). Applicants submit that *randomly* selecting an interior point within a graphic primitive at which to determine an

interpolated channel value is not disclosed by either *Foley, Iwaki,* or the combination of the two references. Thus, all claim limitations are not taught as required by MPEP §706.02(j). Further, the combination of receiving a signal from an interface and randomly selecting an interior point within the graphic primitive are neither suggested, taught, nor motivated by the cited references.

Specifically, *Foley* discloses that linear interpolation must be used to perform Gouraud shading (p. 737, *Foley*). In performing linear interpolation, *Foley* discusses problems associated with interpolated shading techniques and concedes that a limitation and problem with Gouraud interpolated shading is the requirement that shading information must be incremented by a constant amount from one scan line to another along each edge of a primitive. (page 739, *Foley*). *Foley* implies that the technique of Gouraud shading requires a line-by-line traversal in sequential or sequentially-related order.

In contrast, the claimed invention does not recite line-by-line traversal, but *randomly* selecting a point within the graphic primitive. The method disclosed by *Foley* does not permit randomly selecting a point within a primitive, but instead requires that a point must be interpolated in a sequentially traversed manner. As *Foley* specifically recites this as a limitation of interpolated shading, Applicants submit that *Foley* fails to teach, motivate, or suggest the claimed invention.

Finally, it would not have been obvious to one of ordinary skill in the art to combine *Iwaki* with *Foley* to incorporate a signal-receiving interface, particularly since the claimed invention does not disclose Gouraud shading, but instead an improved technique for interpolated shading. Subsequently, the claimed invention permits random access to any point within a graphic primitive, in opposition to the method of *Foley* which requires burdensome sequential

scan line-by-scan line traversal, Applicants submit that the above amendments render claim 1 non-obvious in light of the cited references and in condition for allowance.

Applicants also submit similar amendments to independent claims 8, 9, 13, 14, 15, 23, and 27 emphasizing the random selection of a point within a graphic primitive for determining a channel value which, in contrast to the sequential traversal technique of Gouraud shading disclosed in *Foley* and when combined with receiving a signal from an interface, is rendered not obvious in light of the cited references. Thus, as claims 2-7, 28, and 29 depend from claim 1, claims 10-12, 16-18 depend from claim 9, and claims 24-26 depend from claim 23, Applicants submit that all claims are in condition for allowance for the same reasons as those stated above for claim 1.

Further with regards to U.S. Patent No. 5,739,818 to Spackman (hereinafter *Spackman*), *Spackman* does not cure the deficiencies of *Iwaki* or *Foley*, and does not disclose randomly selecting interior points, as claimed by the present application.

Conclusion

Applicants respectfully submit that the rejections of all claims by the Examiner in the Office Action of October 22, 2002 have been traversed. In particular, the above amendments and remarks demonstrate that neither *Foley*, *Iwaki*, or *Spackman*, either individually or in combination teaches all of the claim limitations in the claimed invention. Further, there is no suggestion or motivation to combine the references to yield the claimed invention. Thus, the claims of the present application are believed to be allowable based on Applicants' above amendments and remarks. Upon consideration of the Request for Continued Examination submitted herewith and entry of the above amendments and remarks, Applicants submit that the

application is in condition for allowance, and respectfully request the issuance of a Notice of

Allowability.

Respectfully submitted,

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APPENDIX A: MARKED-UP VERSION OF AMENDMENTS

In the claims

1. (Fourth amendment)   In a graphics system, a computer-implemented method of rendering a graphic primitive, the graphic primitive having a plurality of sides that define the edge of the primitive, the method comprising:

receiving a signal from an interface, the signal comprising data about a plurality of vertices of the primitive and an independent variable;

determining a channel value for each of the plurality of vertices of the primitive using the data about the plurality of vertices and the independent variable;

randomly selecting an interior point within the graphic primitive;

selecting at least two side points located on a side of the graphic primitive;

determining an interpolated channel value with an interpolation engine for each of the at least two side points; and

determining a channel value at the randomly selected interior point by interpolation from the interpolated channel values of each of the at least two side points.

8. (Fourth amendment)   An electronically-readable medium storing a program for permitting a computer to perform a method comprising:

receiving a signal from an interface, the signal comprising data about a plurality of vertices of the primitive and an independent variable;

determining a channel value for each of the plurality of vertices of the primitive using the data about the plurality of vertices and the independent variable;

randomly selecting an interior point within the graphic primitive;

determining an interpolated channel value with an interpolation engine for each of at least two side points; and

determining a channel value at the <u>randomly</u> selected interior point by interpolation from the interpolated channel values of each of the at least two side points.

9. (Twice amended) A method of rendering a graphic primitive, the primitive including a plurality of edges, the method comprising:

receiving a signal from an interface, the signal comprising data about the plurality of vertices of the primitive and an independent variable;

deriving a channel value of a first point on a first edge of the graphic primitive using data about the plurality of vertices of the primitive and an independent variable;

deriving a channel value of a second point on a second edge of the graphic primitive using data about the plurality of vertices of the primitive and an independent variable; and

based upon the channel values of the first point and the second point, determining a channel value for a[n]<u> randomly selected</u> interior point located within an interior surrounded by the edges of the graphic primitive.

13. (Twice amended) An electronically-readable medium storing a program for permitting a computer to perform a method comprising:

receiving a signal from an interface, the signal comprising data about a plurality of vertices of a primitive and an independent variable;

deriving a channel value of a first point on a first edge of the graphic primitive using data about the plurality of vertices of the primitive and an independent variable;

deriving a channel value of a second point on a second edge of the graphic primitive using data about the plurality of vertices of the primitive and an independent variable; and

based upon the channel values of the first point and the second point, determining a channel value for a[n] _randomly selected_ interior point located within an interior surrounded by the edges of the graphic primitive.

14. (Twice amended)   A system for rendering a graphic primitive, the graphic primitive including a plurality of vertices and edges, the system comprising:

a plurality of agents configured to receive information from an interface related to the plurality of vertices_, a randomly selected point,_ and generate output signals;

an arbiter coupled to the plurality of agents and configured to receive the output signals and to generate request signals;

an interpolation engine configured to receive the request signals and generate an output ratio signal dependent on at least some of the output signals from the plurality of agents; and

a router coupled to the interpolation engine and configured to transmit the output ratio signal to an input of at least one of the plurality of agents.

15. (Fourth amendment)   A system for rendering a graphic primitive in a graphics system, the graphic primitive having a plurality of sides, the system comprising:

a channel value input device configured to determine a channel value for each of a plurality of vertices of the graphic primitive using data received from an interface;

a point specifier, coupled to the channel value input device, configured to randomly select a point within the graphic primitive; and

an interpolation engine coupled to the point specifier and to the channel value input device, configured to determine an interpolated channel value for each of at least two side points using data received from the interface, and further configured to determine a channel value at the randomly selected point by interpolation from the interpolated values.

23. (Twice amended)   A method of generating interpolated values for use in rendering a graphic primitive, the method comprising:

receiving from an interface an independent variable X representing the physical portion of a randomly selected point;

receiving vertex values X0, X1 of a primitive edge having the randomly selected point with the physical position represented by the independent variable X;

receiving depth values Z0, Z1 associated with the vertex values X0, X1; and

calculating a ratio value dependent upon the independent variable X, vertex values X0, X1, and depth values Z0, Z1.

27. (Twice amended)   An electronically-readable medium storing a program for permitting a computer to perform a method of generating interpolated values for use in rendering a graphic primitive, the method comprising:

receiving from an interface an independent variable X representing the physical portion of a randomly selected point;

receiving from the interface vertex values X0, X1 of a primitive edge having the randomly selected point with the physical position represented by the independent variable X;

receiving from the interface depth values Z0, Z1 associated the vertex values of X0, X1; and

calculating a ratio value dependent upon the independent variable X, vertex values X0, X1, and depth values Z0, Z1.